

# Mathematics of Financial Options

Financial Mathematics 3613b

Winter 2019 Course Outline

## Instructor Information

Instructor: [S. Liu](#)

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Phone 519-661-2111 ext TBA

Office Hours: Wednesday 7:30pm-8:30pm

Lecture Hours: Monday 6:30-8:30pm and Wednesday 6:30pm-7:30pm in WSC240

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## Textbook

Matt Davison, Quantitative Finance: A Simulation--Based Introduction Using Excel, CRC Press, (2014)

## Course Objectives

This course is about modern financial mathematics -- the study of making financial decisions under uncertainty. Such decisions are shaped by three main drivers -- the balance between future and present, quantified by the interest rate; the role of uncertainty, often quantified in terms of the volatility, and investors attitudes toward risk. Several products are available to trade and manage risk: stocks and bonds at a basic level; forwards, futures, and options at a more advanced level. We will develop theories for pricing and hedging both individual securities and portfolios of them. By the end of the course we will understand two Nobel-prize winning economic theories -- the Capital Asset Pricing Model of Markowitz, Sharpe, and Miller (Nobel Prize 1990) and the Black-Scholes-Merton theory of options pricing (Nobel Prize 1997). We will learn how to price and hedge a variety of stock options and briefly discuss the challenges involved in extending this pricing theory to other assets.

### **Midterms or Tests (temporary scheduled time)**

Midterm test 1 (Monday, February 11, 6:30pm-8:30pm, in WSC240)

Midterm test 2 (Monday, March 18, 6:30pm-8:30pm, in WSC240)

### **Final Exam**

The final exam will be during the regular exam period. It will cover all of the course material.

### **Evaluation**

Midterm 1 - 25%

Midterm 2 - 25%

Essay - 10%

Final Exam - 40%

### **Computing and/or Calculator Requirement**

Only basic scientific calculators will be allowed in tests or exams (to be precise, calculators with a memory buffer smaller than 10 characters).

### **Department Policy on Missed Course Requirements**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your Dean's office as soon as possible, and contact your instructor immediately. If accommodation is approved, you will receive a grade of "F" for the course.

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**Student Health and Wellness:** As part of a successful student experience at Western, we encourage students to make their health and wellness a priority.